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AUTHOR Reilly, Judy
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ABSTRACT

A study examining the initial stages in the acquisition of the conditional system is reported. The objective was to discover how morphological productivity is related to the child's comprehension of the semantics of individual conditional types. Schachter's model of reality and unreality conditionals was used as a framework. Eight middle class, monolingual English-speaking children aged 2.6 - 3.2 were assigned production and comprehension tasks to elicit the different conditionals. Subject unwillingness and limited language abilities complicated the study. Results showed a wide range of abilities in conditional production, available morphology, and comprehension of the conditional types, showing very individual approaches to integrating the morphological and semantic components, and implicitly, the requisite cognitive notions involved in conditionals. The diversity in approaches to language acquisition suggests that: (1) for each child, individual systems (e.g., morphology or semantics) have individual timetables, implying an initial independence of systems that later become integrated; and (2) although the sequence of development within a particular system is generally predictable, growth within two adjacent systems is not necessarily parallel and development in one does not immediately predict development in another. (MSE)

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Acquisition of Conditionals: the Interaction of Language and Cognition

Presented at the Boston Child Language Conference, October, 1983

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Judy Reilly
Dept. of Psychology
University of California,
Los Angeles

FL014294

Conditional sentences reflect a complex interaction of semantics, morphology, syntax and conceptual abilities. By looking at the initial stages of conditional development, we can see how children integrate these different domains. In view of recent cognitive approaches to language acquisition, (e.g. Piaget 1980) we might predict that the child would first acquire the cognitive underpinnings and semantics, followed by the syntax and morphology.

However, when we examine the data, we don't find such a general pattern, but rather, the children exhibit very individual approaches to solving this linguistic puzzle. For some children semantic development precedes morphological development and for others, the reverse is true.

Before we look at the data and how the morphology and semantics of conditionals interact, it will be helpful to present a brief description of the conditional system in English to see exactly what conditionals entail, both morpholo- gically and semantically. First we will look at the basic structure and then the various conditional types.

For all conditionals in English, the basic form is "If X, then Y". A conditional is a complex sentence composed of a subordinate adverbial clause, the antecedent, which is marked by the subordinator <u>if</u> and a main clause, the consequent, which may, but does not necessarily, begin with <u>then</u>. The dependency relationship between these two clauses has been described as logical implication or entailment. In English, it is grammatical for these clauses to occur in either order, "If Kate picks up the baby pigeon again, it will have a stroke"; or "The baby pigeon will have a stroke if Kate picks it up again."

Semantically, this basic "If X, then Y" structure is rather complex. It requires a child to juxtapose and sequence two states or events. Between these two states a dependency relationship exists where the consequent is dependent on the occurrence of the antecedent. Finally, the morpheme <u>if</u> implies uncertainty on the part of the speaker as to the occurrrence of the event referred to in the antecedent, i.e. IF reflects the notion of possibility of alternative states.

Beyond this basic structure, shared by all conditionals, the various types of conditionals reflect additional semantic features and therefore, implicitly require additional cognitive abilities on the part of the child.

To look at the morphological and semantic interactions in the initial stages of conditional acquisition, I have used J Schachter's (1971) semantic classification of conditionals.

Schachter's model divides conditionals into two major

groups: Reality conditionals which signal reality and Unreality Conditionals which refer to unreal situations.

Reality conditionals refer to events occurring or having occurred in the real world. This includes present, past and generic conditionals. Present conditionals refer to events taking place at the time of the utterance; as in example #1:

-> 1. If it's raining outside, the tortoise is getting wet

Past conditionals refer to past events, as in example #2:

-> 2. If the Russians didn't down the plane, someone else did.

And generics are statements of timeless dependencies, as in example #3:

-> 3. If the tortoise has a runny nose, he sleeps inside.

These can be paraphrased by "whenever".

Semantically, the reality conditionals include features beyond those found in the basic conditional structure. Present conditionals, where the antecedent is wedded to the immediate present, may require that the speaker envision the imminent future. Past conditionals require a notion of past time and events, as well as the ability to infer what might have happened in past time by virtue of presently available information. Generic conditionals require a generalization of events over time and therefore are detached from the immediate time and context.

In Unreality Conditionals, there is some divergence from the real world, i.e. some notion of irrealis, and there are two groups: Predictives and Imaginatives. Predictives forecast the occurrence of some event in the real world in real time which has not yet occurred. The simple future tense (will+verb) occurs in the consequent as in example #4 below:

-> 4. If Jamie grows another six inches, he'll be 6'5".

These conditionals require a speaker to represent a future event and posit a consequent dependent on that first but as yet unrealized event.

Imaginative conditionals express a divergence from the real world and therefore require the ability to suspend reality, at least temporarily. There are two basic types of Imaginatives, Hypotheticals and Counterfactuals.

Hypotheticals refer to situations which might possibly occur, but are not being claimed to obtain in the real world at the time of the speech act, as in example 5:

-> 5. If I ate pasta everyday, I would be enormous,

Subjunctive counterfactuals refer to situations which could not occur. They challenge a child's concept of what is real and unreal, possible and impossible in the real world, as in example #6:

-> 6. If I were taller, I could eat more.

True counterfactuals refer to situations which could, but did not occur, as in #7:

-> 7. If you had been in L.A., you would have felt the earthquake.

In the counterfactual instances, we interpret the antecedent as being strongly negated. These are clearly the most complex conditionals, both semantically and morphologically. Semantically, not only must the child be able to suspend reality, but past reality must be negated and based on that negation of past events, an unrealized contingency is then predicted.

All the various conditional types share the basic "If X, then Y" structural description, however, these different semantic types are morphologically distinguished by the verbal auxiliary of either or both clauses. Predictives which have the simple future in the consequent, group morphologically with the Reality conditionals and use the indicative mood. The imaginatives all use the conditional mood, signalled by would in the consequent. The following table summarizes Schachter's framework and the required morphology for the different types of conditionals.

TABLE 1
Semantic Classification of Conditionals

REALITY CONDITIONALS (refer to events in the real world)

1. Present: If it's raining outside, the tortoise is getting wet.

2. Past: If the Russians didn't down the plane, someone else did.

3. Generic: If the tortoise has a runny nose, he sleeps in the house.

UNREALITY CONDITIONALS (refer to situations where there is some divergence from reality)

PREDICTIVES

4. If Jamie grows another six inches, he'll be 6'5".

IMAGINATIVES

Hypothetical:

5. If I ate pasta everyday, I would be enormous. (might occur)

Counterfactual:

6. If I were taller, I could eat more. (Subjunctive counterfactual, could not occur)

7. If you had been in L.A., you would have felt the earthquake. (True counterfactual, did not occur)

Using this framework as a base, my study examines the initial stages in the acquisition of the conditional system in order to discover how morphological productivity is related to the child's comprehension of the semantics of individual conditional types.

Naturalistic and experimental data were collected from eight middle-class, mono-lingual English speaking children ages 2,6-3,2; when they were first producing conditional sentences. Tasks based on Schachter's framework were designed to assess production and comprehension of the different types of conditionals.

As many of you have worked with two-year-olds, you are aware of the difficulties of devising appropriate tasks, and of discovering how to keep their attention. For these reasons, previously designed tasks which I also administered to older children, were individualized for the twos. Even with this flexibility, the two-year-olds had some difficulty with the tasks themselves. For example, one task was imitiation and when presented with a hypothetical conditonal, Sarah said, "I can't; it's too long".

Another task was composed of What If? questions. Given that the various conditional types vary according to the auxiliary verbs in both clauses, the children were asked "What if?" questions with differing auxiliaries to elicit different consequent responses. For example, "what if you eat three ice cream cones?" might elicit a present tense response You get sick (a present or generic consequent) or the simple future You will get sick (a predictive consequent). I also used this format to test counterfactual comprehension. I presented the children with a situation with a known result, and then asked a question varying the situation in some critical manner. For example, the children were read the story of The Three Little Pigs where as you may recall the straw and stick house were blown down by the wolf while the brick house remained standing. I then asked the children questions such as "What if the straw house had been made of bricks?"

To assess comprehension of the basic conditional structure I gave the children a blank lion's face and asked them to put features on the face with a partner, using the available cut-out shapes. One child had to say to the other, "If you put on (some facial feature), I will give you a marhmallow." Turns alternated until the face was full. Then I asked, "What if the lion had been an elephant, snake, fish, etc.?"

RESULTS and DISCUSSION

If we combine and integrate the naturalistic and experimental data, the picture emerging is one of great diversity. We find that initially, children have distinctly individual approaches to solving the linguistic problem of integrating the morphology and semantics of the conditional system. Before we look at the individual differences, I want to point out where the common ground does in fact exist, and that is in the types of conditionals first produced.

For seven of the eight children, their first spontaneously produced conditionals were present or predictive conditionals as in examples 8 and 9 below:

8. Kate (2,10; hit me with a string bag; I laughed):
   Mother: Don't hit me/
   Kate: I'll do it again, if you laugh/

9. Sara (2,8; playing with blocks)
   If we put one in here, then it can go in here/

The one child who initially follows a different path is Matthew who first produces hypothetical frames, beginning with, "If I were..." as in the following examples:

10. Matthew (2,9):
    If I were a zebra, then I have stripes/
    If I were a ant, I will scare you/

Beyond this common base of fluency with present and/or predictive conditionals, (except for Matthew) there is a great deal of variation at the beginning stages of conditional production. This variability is linguistic and cognitive, as well as chronological. The individual differences are nicely reflected in the children's answers to the various types of "What If?" questions.

At one end of the continuum is Emy who at 2,9 does not produce any conditionals (her first conditional is recorded at 3,2) and she cannot, or will not participate in any tasks

Next is Amanda who spontaneously uses conditionals for a proto-generic function as in example 11:

11. Adult: Can you tell me what umbrellas are for?
    Amanda(2,11): They are for putting on( )
    -> if it rains then we have to have umbrella/

She has <u>couldn't</u> and <u>should</u>, as well as the simple future tense in her grammar, but has a great deal of trouble with all "What if?" questions. She either changes the topic, denies the question or interprets it as a suggestion. So, although Amada has the basic syntactic structure as well as the simple future and some potential conditional morphology, she demonstrates little or no comprehension of the various conditional types, nor of a "What if?" question.

The third child on the scale, Sara, controls the present and simple future tenses. She produces present and predictive conditionals and responds appropriately to

present "What If?" questions. However, her responses to past, hypotheticals and counterfactuals are inappropriate or are denials as in examples 12, 13 and 14:

12. Adult: What if you were a rabbit?
    Sara (2,8): Yeah/
    I a rabbit/

13. Adult: What if you were a baby?
    Sara (2,8): I not a baby/

14. Adult: What if a snake had eaten your daddy?
    Sara (2,8): No!/
    Can't eat my daddy/

Sara answers appropriately to present "What if" questions and produces present and predictive conditionals. Her semantic and morphological abilities seem to be matched.

A fourth two-year-old, Kate, appropriately answers "What if" questions which have a variety of verb tenses in the antecedent. She shows good comprehension of the distinctions and gives appropriate responses to counterfactual and hypothetical questions. However, Kate has no conditional verb morphology, and always responds with the simple future, as in 15-17:

15. Adult: What if you drink really hot soup?
    Kate (2,8): It will burn me/

16. Adult: What if you were a Wild Thing?
    Kate (2,8): I [w l] roar/
    Adult: Are you a wild thing?
    Kate: No, I'm a girl/

17. Adult: What if this turtle had been a rabbit?
    Kate (2,10): It [w l] hop/

Kate's abilities are quite discrepant. Cognitively she is able to suspend reality to respond the hypotheticals and she can mentally manipulate reality and extend possibility to respond appropriately to counterfactuals. Yet she has no way to morphologically mark these semantic distinctions due to her very limited morphological capabilities.

The fifth and sixth two-year-olds, Lauren and Wynn, both spontaneously produce present and predictive conditionals and respond appropriately to present "What if?" questions. Also, they have a wider range of verb morphology available to them, in that they use both will and would in their responses (although they may be in free variation). However, they do not seem to control the hypothetical semantics. Cognitively, they appear to be incapable of temporarily suspending reality. Lauren and Wynn both deny some hypotheticals and all subjunctive counterfactuals, as in 18 and 19 below:

18. Adult: What if Ilse bit you?
    Lauren: (2,8): Her doesn't bite!/

19. Adult: What if you were a bird?
Wynn (2,8): I'm not a bird/
Just a people/

Further, Lauren and Wynn were either unwilling or unable to participate in the counterfactual task. In sum then, although these two both have the conditional morphology at their disposal, their retreat to reality, as reflected in their responses to hypothetical and counterfactual questions, suggests they are lacking the cognitive correlate. Specifically, they appear not to understand the conditional morphology they spontaneously produce.[1]

The seventh child, Ryan, has both will and would available and produces both predictive and hypothetical conditionals, but like Wynn and Lauren, he denies some hypotheticals, subjunctive counterfactuals, and changes the topic or denies the true counterfactuals. By producing hypotheticals, Ryan shows some ability to suspend reality, but the concept is only partially developed as he has difficulty when the task is other-initiated.

The eighth two-year-old is at the far end of the continuum. His first conditionals were hypotheticals as we saw in example 10, and Matthew has both will and would at his disposal. More interestingly, he produces neither present nor predictive conditionals, but rather uses when temporals for the predictive function, as in "When Katie comes over, I'll share my candy". However, Matthew is quite successful on all the tasks including counterfactuals, yet he spontaneously produces only hypotheticals.

In carefully examining the data, we find a wide variety of abilities in conditional production, available morphology, and comprehension of the different conditional types. These are summarized in the Table 2 on the next page.

As you can see from the Table, at one extreme, there is Kate who seems to comprehend all the conditional types, but has no morphological marker to differentiate them. Lauren and Wynn, in contrast, have the conditional morphology at their disposal yet appear to not have the semantic correlate in that they deny hypotheticals as well as subjunctive and true counterfactuals. Matthew controls the semantics and morphology for present, predictive, and hypothetical conditionals and comprehends the counterfactuals, but he only produces hypotheticals.

TABLE 2
Semantic and Morphological Profiles

CHILD	PRODUCTION	COMPREHENSION (responds appropriately to)	AVAILABLE MORPHOLOGY
1. Emy	none	none	present will
2. Amanda	proto-generic	none	present will, could, should
3. Sara	present predictives	present	present, will
4. Kate	present predictives	present, predictives hypotheticals, true and subjunctive counterfactuals	present, will
5. Lauren Wynn	present predictives	present, predictives (deny some hypothetical & all counterfactuals)	present, will would
6. Ryan	present predictives hypotheticals	present, predictives (denies most hypotheticals & changes topic or denies all counterfactuals)	present, will would
7. Matthew	hypotheticals	present, predictives hypotheticals, true and subjunctive hypotheticals	present, will would

In conclusion then, the children show very individual approaches to integrating the morphological and semantic components, and implicitly, the requisite cognitive notions involved in conditionals. This variation demonstrates some of the possible pathways into an adult grammatical system. The wide diversity in approaches to the task of language acquisition suggests the following points:

1. For each individual child, different systems (e.g. morphology or semantics) have individual timetables. This implies an initial independence of systems which we later find integrated in the larger grammatical system of conditionals.

2. Although the sequence of development within a particular system is generally predictable, for example, all the children controlled the simple future tense before the simple conditional, growth within two adjacent systems is not necessarily parallel and development in one does not immediately predict development in the other.

These findings suggest the initial relative independence of the semantic and morphological domains and further imply the separateness of cognitive and linguistic development.

NOTES

1. Evidence that these denials relfect the child's inability to temporarily suspend reality comes from two sources:

1. The two two-year-olds who deny neither hypothetical nor counterfactual "What if" questions, Kate and Matthew, are also the only ones who were successful on the counterfactual comprehension tasks, and responded appropriately to them.

2. In administering the tasks to older children, I found that many three-year-olds also deny or reject the hypothetical and subjunctive counterfactual "What if" questions, and as a group, the threes do very poorly on the counterfactual tasks (36% successful). In contras, four-year-olds (as well as fives, sixes, sevens and eights) no longer deny or reject any "What if" questions and are quite successful on the counterfactual tasks (93% correct for the four-year-olds).

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